MATERIAL SAFTY DATA SHEET

MITSUBISHI MATERIALS U.S.A. CORPORATION

June 7, 2002

Chemical Name: Cubic Boron Nitride with Binder
Trade name: All Mitsubishi Carbide cBN Grades
Molecular Weight N/A

PHYSICAL DATA

Appearance and Odor: Dark Grey Metal/No Odor
Boiling Point: N/A
Vapor Pressure (mmHg) N/A
Vapor Density (air=1) N/A
Solubility in Water: Insoluble
Specific Gravity (H_2O=1)
Percent Volatile by volume: 0
Evaporation Rate: N/A
How Best Monitored: Air Sample

HAZARDOUS INGREDIENTS

Material	CAS Number	% by Mass	OSHA PEL (mg/m^3)	ACGIH TLV (mg/m^3)
[cBN layer]				
Boron Nitride	10043-11-5	35-90% *	N/A	N/A
Titanium Carbide	12070-06-3	0-50% *	5	5
Titanium Nitride	25583-20-4	0-50% *	N/A	N/A
Aluminum Oxide	1344-28-1	0-15% *	15	
[Cemented Carbide layer]				
Tungsten Carbide	12070-12-1	76-83% *	5	5
Cobalt	7440-48-4	1-30% *	0.1	0.02
[Base Insert]				
Tungsten Carbide	12070-12-1	92-95%	5	5
Cobalt	7440-48-4	5-8%	0.1	0.1

* Depends on grade specifications

HEALTH HAZARD DATA

Routes of Exposure: Grinding cBN product, will produce dust of potentially hazardous ingredients which can be inhaled, swallowed, or come in contact with the skin or eyes.

Effects of overexposure

Inhalation: Dust from grinding can cause irritation of nose and throat. It also has the potential for causing transient or permanent respiratory disease, including occupational asthma and interstitial fibrosis, in a small percentage of exposed individuals. It is reported that the cobalt dust is the most probable cause of such respiratory diseases. Symptoms include productive cough wheezing, shortness of breath, a chest tightness and weight loss. Interstitial fibrosis (lung scarring) can lead to permanent disability or death. Certain pulmonary condition may be aggravated by exposure.

Skin Contact: Can cause an irritation or an allergic skin rash due to cobalt sensitization, Certain skin conditions, such as dry skin, nay be aggravated by exposures.

Eye Contact: Can cause irritation

Ingestion: Reports outsides the industry suggests that ingestion of significant amounts of cobalt have the potential for causing of blood, heart and other organ problems.

Emergency and First Aid Procedures: Applicable for dusts or mists.

Inhalation: If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.) remove from exposure and seek medical attention.

Skin Contact: If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.

Eye Contact: If irritation occurs, flush with copious amounts of water. If irritation persists, seek medical attention.

Ingestion: If substantial quantities are swallowed, dilute with a large amount of water, induce vomiting and seek medical attention.

Carcinogenic Assessment:

The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) found there was inadequate data for the carcinogenicity of chromium and trivalent chromium compounds. The IARC found that metallic cobalt and metallic nickel are possibly carcinogenic to humans. Cobalt has not been classified as a known or suspected carcinogen by the NTP or Occupational Safety and Health Administration (OSHA). However, for the state of California regulations under Proposition 65 (California Health and Safety Code Section 25249.5 et seq.) this product contains or produces a chemical(s) known to the State of California to cause cancer.

FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A

Test Method Used: ---

Flammable Limits: N/A
LEL: ---
UEL: ---

cBN product is not a fire hazard. Dusts generated in grinding operations may ignite if allowed to accumulate and are subject to an ignition source.

Extinguished Media:

For powder fires, smother with dry dolomite, ABC type fire extinguisher, or flood with water.

Special Fire Fighting Procedures:

For a powder fire confined to small area, use a respirator approved for toxic dusts and fumes, for large fire involving this material, fire fighters should use self-contained breathing apparatus.

Unusual Fire and Explosion Hazards:

Dusts may present a fire explosion hazard under rare favoring conditions of particle size, dispersion, and strong ignition source. However, this is not expected to be a problem under normal handling conditions.

REACTIVITY DATA

Stability: Unstable_____ Stable____X_____
Conditions to avoid: N/A
Incompatibility: Contact of dust with strong oxidizers may cause fire or explosions.
Materials to avoid: strong acids
Hazardous Decomposition Products: None
Hazardous Polymerization:
May occur Unstable_____ Will not occur____X_____
Conditions to avoid: N/A

SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

Ventilate area of spill, clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the OSHA PEL or the ACGIH TLV), wet dust mop or wet clean up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Waste Disposal Method:

Disposed of in accordance with appropriate government regulations. May be sold as scrap for reclaim.

SPECIAL PRECAUTIONS

Precautions to be taken in handling and storage:

Maintain good housekeeping procedures to prevent dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust.

Other Precautions:

Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the OSHA PEL or the ACGJH TLV), wet dust mop or wet clean up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

In case of questions, please call:

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